path of said tube and is visible when said endotracheal tube is inserted, said detector comprising a backing and an indicator material, said indicator material comprising a support material, a pH-sensitive dye, and a phase transport enhancer for enhancing a reaction between a gas and said pH-sensitive dye, said phase transport enhancer having the formula:

T4410

$$R_1 - X^+ - R_3 Y^-$$
 or R_4

wherein X = N or P,

 R_1 , R_2 , R_3 and R_4 are selected from the group consisting of C_1-C_{12} alkyl,

P2 14 C_1 - C_4 substituted alkyl wherein the substituent is a C_1 - C_4 alkyl or phenyl group,

P1 naphthyl,

benzyl, and

pyridine;

 R_5 is selected from the group consisting of C_1 - C_{12} alkyl and benzyl; and

Y is an anion selected from the group consisting of hydroxide, fluoride, chloride, bromide, iodide, carbonate and tetrafluoroborate.

Kessler & Goldstein Apparatus as recited in claim 56, wherein said 1225 CONNECTICUT AVENUE SHINGTON, D. C. 20036 phase transport enhancer is selected from the group (202) 466-0800

consisting of tetrabutylammonium hydroxide, tetrabutylammonium chloride, tetraethylammonium bromide, tetraethyl-

Saidman, Sterne,

ammonium <u>p</u>-toluenesulphonate, phenyltrimethylammonium chloride, benzyltrimethyl-ammonium bromide, tetra-n-propyl-ammonium bromide, benzyltriethylammonium tetrafluoroborate, n-dodecyltrimethylammonium bromide, tetraphenylphosphonium chloride, n-hexadecylpyridinium bromide and triphenylmethyl-triphenylphosphonium chloride.

A tracheal intubation apparatus, comprising:

means for receiving gas expired from a person; and a detector disposed within said means for visually indicating whether a substantial concentration of CO₂ is present in said gas, wherein said detector comprises indicator material which changes from one color in the presence of CO₂, and changes to another color in response to an absence of CO₂, said indicator material comprising a support material, a ph-sensitive dye, and phase transport enhancer for enhancing a reaction between a gas such as CO₂ and said ph-sensitive dye, said phase transport enhancer having the formula:

ワ

PS

wherein X = N or P,

P R_1 , R_2 , R_3 and R_4 are selected from the group consisting A of C_1 - C_{12} alkyl,

 ho_2 14 c_1 - c_4 substituted alkyl wherein the substituent is 14 a c_1 - c_4 alkyl or phenyl group,

naphthyl,

SAIDMAN, STERNE, KESSLER & GOLDSTEIN ATTORNEYS AT LAW 1225 CONNECTICUT AVENUE WASHINGTON, D. C. 20036 (202) 466-0800 Pa benzyl, and

pyridine;

 R_5 is C_1-C_{12} alkyl or benzyl; and

Y is an anion selected from the group consisting of hydroxide, fluoride, chloride, bromide, iodide, carbonate and tetrafluoroborate.

A tracheal intubation apparatus, comprising:

P) means for receiving gas expired from a person; and a detector disposed within said means for visually indicating whether a substantial concentration of CO2 is present in said gas; wherein said detector comprises a phase transport enhancer and a dye solution applied to a support material, said phase transport enhancer enhancing a reaction between a gas such as co2 and said dye solution, said phase transport enhancer having the formula:

D

4 60x

$$R_1 - X^+ - R_3 Y^-$$
 or R_4

wherein X = N or P,

PI R_1 , R_2 , R_3 and R_4 are selected from the group consisting 4 of C_1 - C_{12} alkyl,

 C_1 - C_4 substituted alkyl wherein the substituent is \mathcal{M} a C_1 - C_4 alkyl or phenyl group,

> ρ_{Z} naphthyl,

> > benzyl, and pyridine;

225 CONNECTICUT AVENUE SHINGTON, D. C. 20036 (202) 466-0800

SAIDMAN, STERNE, KESSLER & GOLDSTEIN R_5 is $C_{1-C_{12}}$ alkyl or benzyl; and

Y is an anion selected from the group consisting of hydroxide, fluoride, chloride, bromide, iodide, carbonate and tetrafluoroborate.

A breath indicator comprising:

 5_{Pl} a. means for receiving CO_2 ;

b. a detector disposed within said means for receiving CO2, said detector comprising means for changing between a first color and a second color, said first color indicating an absence of CO2 and said second color indicating a presence of CO2, said means for changing between a first color and a second color comprising indicator material, said indicator material further comprising a dye and a phase transport enhancer for enhancing a reaction between a gas. $\frac{HC^{0}3^{-}}{\text{such as CO}_{2}}$ and said dye, said phase transport enhancer having the formula:

D

$$\begin{array}{c} \begin{array}{c} R_2 \\ \\ R_1 - X^+ - R_3 Y^- \end{array} \text{ or } \\ \\ R_4 \end{array}$$

$$N^+$$
 - R_5

wherein LX = N or P,

 R_1 , R_2 , R_3 and R_4 are selected from the group consisting /4 of C_1-C_{12} alkyl,

 $\mathtt{C_{1}\text{-}C_{4}}$ substituted alkyl wherein the substituent is $\frac{14}{4}$ a C_1-C_4 alkyl or phenyl group,

PZ naphthyl,

benzyl, and

Saidman, Sterne, Kessler & Goldstein 1225 CONNECTICUT AVENUE

P2 pyridine;

 ρ R₅ is C₁-C₁₂ alkyl or benzyl; and

P/ Y is an anion selected from the group consisting of 3/ hydroxide, fluoride, chloride, bromide, iodide, carbonate and tetrafluoroborate.

Ch

A breath indicator comprising:

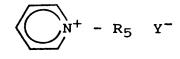
Pl a. means for receiving CO2;

L b. a detector disposed within said means for receiving CO₂, said detector comprising means for changing between a first color and a second color, said first color indicating an absence of CO₂ and said second color indicating a presence of CO₂, said means for changing between a first color and a second color comprising indicator material, said indicator material comprising a support material, a ph-sensitive dye applied to said support material, and a phase transport enhancer for enhancing a reaction between a gas such as CO₂ and said ph-sensitive dye, said phase transport enhancer having the formula:

D D

T480X

$$R_1 - X^+ - R_3 Y^-$$
 or R_4



PS

wherein X = N or P,

SAIDMAN, STERNE,
KESSLER & GOLDSTEIN
ATTORNEYS AT LAW
1225 CONNECTICUT AVENUE
WASHINGTON, D. C. 20036
(202) 466-0800

P R₁, R₂, R₃ and R₄ are selected from the group consisting P of C_1-C_{12} alkyl,

P2 14 C_1-C_4 substituted alkyl wherein the substituent is 14 a C_1-C_4 alkyl or phenyl group,

ρ2 naphthyl,

benzyl, and

P2 (b)

pyridine;

PI R₅ is C₁-C₁₂ alkyl or benzyl; and

Y is an anion selected from the group consisting of Si hydroxide, fluoride, chloride, bromide, iodide, carbonate and tetrafluoroborate.

A method for determining the proper placement of an endotracheal intubation device comprising the steps of

(1) inserting a device into the trachea of a method appropriate comprising the patient, said device comprising to the trachea of a patient, said device comprising to the trachea of a patient, said device comprising to the trachea of a patient said device comprising to the trachea of a patient said device comprising to the trachea of a patient said device comprising to the trachea of a patient said device comprising to the trachea of a patient said device comprising to the trachea of a patient said device comprising to the trachea of a patient said device comprising to the trachea of a patient said device comprising to the trachea of a patient said device comprising to the trachea of a patient said device comprising to the trachea of a patient said device comprising to the trachea of the tra

Pa (a) an endotracheal apparatus which includes a tracheal tube defining a gas path; and

a CO₂ detector disposed within endotracheal apparatus at а location which is in the gas path of said tube and is visible when said endotracheal tube is inserted, said detector being capable of indicating whether a substantial concentration of ${\rm CO_2}$ is present in said said CO₂ detector comprising a backing, and an indicator material, said indicator material comprising a solid phase support, a pH-sensitive dye, and a phase transport enhancer for enhancing a reaction between & gas such

ON ON

0

SAIDMAN, STERNE,
KESSLER & GOLDSTEIN
ATTORNEYS AT LAW
1225 CONNECTICUT AVENUE
WASHINGTON, D. C. 20036
(202) 466-0800

D

said pH-sensitive dye, said phase transport enhancer having the formula:

 $\rho_{X} = N \text{ or } P,$

 P_3 R₁, R₂, R₃ and R₄ are selected from the group consisting of C₁-C₁₂ alkyl,

 $\rho \not = C_1 - C_4 \text{ substituted alkyl wherein the substituent is } \not = C_1 - C_4 \text{ alkyl or phenyl group,}$

pyridine;

 P_3 R₅ is selected from the group consisting of C₁-C₁₂ alkyl or benzyl; and

 ρ) (2) observing a color change of the indicator which indicates the presence of ${\rm CO_2}$ in the respiratory gas and thereby the proper placement of the endotracheal tube.

The method of claim 2, wherein said phase transport enhancer is selected from the group consisting of tetrabutylammonium hydroxide, tetrabutylammonium chloride, tetraethylammonium bromide, tetraethylammonium p-toluenesulphonate, phenyltrimethylammonium chloride, benzyl-

SAIDMAN, STERNE,
KESSLER & GOLDSTEIN
ATTORNEYS AT LAW
1225 CONNECTICUT AVENUE
WASHINGTON. O. C. 20036
(202) 466-0800

Con

trimethylammonium bromide, tetra-n-propylammonium bromide, benzyltriethylammonium tetrafluoroborate, n-dodecyltri-methylammonium bromide, tetraphenylphosphonium chloride, n-hexadecylpyridinium bromide and triphenylmethyltriphenyl-phosphonium chloride.

Please cancel claims 48-55 without prejudice or disclaimer to the subject matter therein.

REMARKS

Applicants wish to thank the Examiner for the helpful and courteous telephone interview held with the undersigned and David K.S. Cornwell, Reg. No. 31,944 on April 24, 1990. The issues in the case were discussed.

New claims 56-63 correspond to old claims 48-55 except for correction by addition of the heterocyclic ring of the phase transport enhancer depicted in the claims and except for insertion of the definition of the phase transport enhancer in new claims 59 and 61. No new matter was added by way of these amendments. Reconsideration of claims 56-63 in light of the following remarks is respectfully requested.

THE REJECTIONS UNDER 35 U.S.C. § 103 MAY BE PROPERLY WITHDRAWN

Claims 51 and 53 are rejected under 35 U.S.C. § 103 as being unpatentable over Fehder in view of Heitzmann. The Examiner states that Fehder discloses a tracheal intubation apparatus comprising a detector for carbon dioxide. The

SAIDMAN, STERNE,
KESSLER & GOLDSTEIN
ATTORNEYS AT LAW
1225 CONNECTICUT AVENUE
WASHINGTON, D. C. 20036
(2021 466-0800